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- USSR -

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ORGANIZATION OF PRODUCTION, LABOR PRODUCTIVITY AND COSTS IN THE COAL INDUSTRY OF THE CPR

This is a translation of an article by I. I. Bazhenov, I. A. Leonenko, and A. K. Kharchenko as chapter 17 in Ugol'naya Promyshlennost' Kitayskoy Narodnoy Respubliki (Coal Industry of the Chinese People's Republic), Moscow, 1959, pages 438-455.

Administration Structure

The coal production in the coal industry of the CPR is carried on in mines and quarries which are owned by various organizations, including the Ministry of Coal Industry, the local industry, and the people's communes.

In 1957, almost three fourths, and in 1958, more than half, of the entire coal output came from the mines and coal quarries of the Ministry of Coal Industry. Therefore, the structure of the organization of the coal industry in the system of the Ministry of Coal Industry commands the greatest interest.

The rapid development of the coal industry led to the necessity of perfecting the structure of administration in the direction of further democratization (of enlarging the rights of provincial organizations) and strengthening the centralization of management. The process of perfecting the structure continues. At the beginning of 1958, the structure of management in the system of the Ministry of Coal Industry was as follows.

The basic production units were the mine and the coal quarry. Depending on the size of the enterprise, the mine or the quarry consisted of one or a few production sections. As a rule, a section combined one, two, three, but not more mineable stopes with adjoining preparatory stopes. Small mines were jointly controlled by mine administrations.

The basic mines were under the direct authority of the trusts which in turn were united into combines.

At the beginning of 1958, the Ministry of Coal Industry comprised ten combines which had direct control over 51 trusts and mine administrations. The combines guided the

production activity, and also the construction of enterprises of the coal industry.

The combines differ as to their dimensions considerably from one another. The largest ones are located in the North-Eastern and Northern coordinated regions. An opinion of the size of the combines (relative to the number of trusts and mine administrations included) and their share in the total output of the Ministry may be formed on the basis of the data given in Table 151.

Table 151

Combines	Quantity of Trusts and Mine Administrations	Share of the Combines in the Output for 1957 in percentages
T'ienchin	4	16.4
T'aiyuan	7	15.2
Shenyang	4	23.3
Harbin	7	21.3
Hsian	3	1.7
Chinan	7	13.7
Chengchou	7	5.4
Ch'ungch'ing	10	2.6
Kueiyang	1	0.2
K'unming	1	0.2
Throughout the Ministry	51	100.0

At present, the Ministry of Coal Industry exercises direct control over organizations, directing the coal mines and quarries in only six provinces: Liaoning, Hepei, Shan-si, the autonomous region Ninghsia, Yunnan, Kueichou and the city of Peiping (the Chihhsi trust). In other provinces, the trusts and mine administrations are subject to the departments of the provinces (departments of coal, fuel, fuel-chemistry, etc.).

The Ministry of Coal Industry drafts a plan for the output of coal, for indispensable capital investments, for the distribution of coal among the consumers and for the need of supplying all enterprises, subordinated to the Ministry, with materials, and it presents the draft for consideration to the State Planning Committee of the CPR.

The mines of the people's communes are subject only to the communes.

Working Conditions

The rational working conditions of individual enterprises and of entire branches of the national economy exerts a great enough influence on the development of these branches and enterprises, on the more efficient utilization of the technology applied, on the improvement of the qualitative indices of labor. But the concept of the most advantageous working conditions in every country is determined on the basis of the concrete goals, the conditions and the period of time during which these tasks are to be solved. At the present moment when the main task of the CPR is the all-out expansion and increase in the production of the industry, the most advantageous working conditions are acknowledged to be the uninterrupted seven-day working week. The mines and quarries operate almost the entire year. The number of working days a year is as high as 358. The coal enterprises do not work only on holidays. The entire year has seven holidays on which, as a rule, repairs are conducted. In the planned new mines the mode of work provides for 300 working days a year. This arrangement anticipates the creating of reserves and the possibility in the future to shift to a new, more advantageous mode of work.

The workers toil six days a week. The seventh day is a rest-day according to a sliding scale. During a 24-hour period the mineable stopes used to be worked before in two shifts; the third shift was set aside for repair and preparatory work. At present, in connection with the intensification of production, the output of coal in three shifts is increasingly instituted. The repair and preparatory work is conducted by complex brigades. On declivous seams the transfer of conveyors without dismantling them is introduced. When working with total cave-ins, the installation of the timber roof is accomplished at the start or at the end of the shift. Major repairs are done on holidays.

The length of the working day amounts to eight hours. In most cases the working day is counted from the moment of arrival at and departure from the working place. But in certain regions and mines for a large number of reasons the working day is calculated from the moment of boarding the hoist cabin by the worker to the end of the shift at the working place.

In 1958, there was initiated in many mines an examination, for the sake of gaining experience, of the expediency of switching to a six-hour and four-shift mode of work in the mines.

Speed of Advancing Coal Extracting and Preparatory Stopes

Under the conditions of the mine industry, one of the concrete expressions of the level of organization of production and of utilization of the applied technology in the mines is the speed with which the face of the stope is advanced. The advancing of workable stopes, closely related to other production processes, gives an idea of the accomplishments in the area of applied technology and in the organization of production in the mine as a whole.

During recent years the average monthly speed of advancing workable stopes in the mines of the CPR rose considerably and reached in 1957 36.25, and in 1958 40.76 meters

The increase, in the course of a year, in the advancement of the worked face of the stopes in the Mines of the Coal Industry by 12.4 percent, with a not very long gallery, must be recognized as a great success for the miners of China. In this connection one should keep in mind the high yield of one cubic meter of seam which in 1957 represented 2.30 and in 1958 - 2.37 tons.

Below are given the data on the speed of advancing and on the average length of the galleries in the basic trusts and mine administrations of the CPR for February 1958

	Speed of Advance- ment in Meters	Average Length of the Gallery in Meters		Speed of advance- ment in Meters	Avera Lengt of th Galle in Meter
K'aailang . . .	38.57	64.90	Shuanyashang . . .	35.75	64.87
Fengfeng . . .	41.69	64.47	Tsepo	36.99	72.43
Tingting . . .	46.22	37.56	Fangtse	37.78	36.00
Yangch'uan . .	38.62	79.13	Tsaochuan	34.09	69.00
Hsishan	41.21	36.96	Tiawang	41.71	70.58
Luan	43.64	57.98	Huainan	38.82	50.06
Fushun	40.43	70.27	Chiaotso	39.62	51.19
Penchi	24.70	101.50	Nant'ung	42.62	54.70

In February 1958, in the K'aailan trust the advancement of galleries averaged 38.57 meters. On an average the speed of advancing for the entire year 1958 and in all 69 mineable stopes of this trust amounted to 53.4, and in the first quarter of 1959, to 66.14 meters.

In evaluating these indices, it should be born in mind that February is the shortest month and that this was the period when the preparations for accomplishing the great leap forward was only under way.

In the first quarter of 1959 a greater speed of advancing was achieved, particularly in the individual mines and

workable stopes. Thus, in the "T'angchiachuang" mine of the K'ailan trust in the gallery No. 5299, 170 meters long, three meters in thickness, with a slope of 35 degrees, the monthly advancement amounted to 110 meters. The output in this gallery for the month reached 64,046 tons, and the maximum output in a 24-hour period amounted to 3,286 tons. One may cite many separate examples in mines and in galleries in which the speed of advancement and the coal output in the period of the great leap forward rose two and more times.

An extremely important indicator of great accomplishment and success in the sphere of organization of production is the increase in the load of the solid stopes, the sections and the mines. In the first quarter of 1959, more than 400 galleries yielded more than 10,000 tons of coal a month. In the K'ailan trust alone there were in 1958 13 workable stopes with an average capacity and powerful seams with an output of over 30,000 tons and eight stopes in thin laminations one meter thick with an output of over 15,000 tons. In the Ministry of Coal Industry as a whole the average monthly coal output from one gallery amounted in 1957 to 5137 and in 1958 to 5713 tons.

The high indicators of the speed of advancing the coal extracting processes at the face and of the load of the galleries were achieved as a result of the adoption of the most rational cyclic organization of operations that found a rather wide application in the coal mines of the CPR. Under the conditions of the applied technology and the forms of the organization of labor, the work according to a cyclic diagram proved most efficient. In most cases the work at the face is organized in accordance with the cyclic diagram within a 24-hour period which sets the norm. If there occurs a deviation from the established normative, then it is believed that such a cycle was "not normal" or "violated." Therefore, the accounting is done on the basis of normally completed cycles. At present, more and more bicyclic and tricyclic diagrams for the work in the seams are applied.

The rapid development of the coal output led to the necessity of completing an enormous amount of preparatory work which in turn influenced the selection of the most progressive systems of exploitation with a minimum of preparatory work. This notwithstanding, for 1000 tons of coal output in 1957 there were 31.25 meters of preparatory work and in 1958 31 meters, including fundamental work amounting to 10.61 and 11.33 meters respectively.

Owing to a clear organization of the work, high speeds for the conducted preparatory work were attained. In Table 152 are given the data on the speed of preparatory work

carried out in certain basic trusts and mine administrations in February 1958.

Table 152

Trusts, Mine Administra- tions	Speed of Conducting Preparatory Work in Meters		Trusts, Mine Administra- tions	Speed of Conducting Preparatory Work in Meters	
	in coal	in rock		in coal	in rock
Chinghsi..	105.7	57.3	Tsepo	99.9	51.4
K'aiilang..	97.2	31.9	Hsinwen	117.3	59.7
Fengfeng..	119.3	50.9	Tsaochuan	109.5	55.7
Yingting..	91.5	41.6	Tawang	132.0	62.2
Tat'ung	80.7	40.0	Huianan	127.2	60.5
Pushun	70.4	39.0	Chiaotso	114.4	—
Fuhsin	116.4	57.1	Tsao	101.0	56.8
Penchi	81.8	46.3	Tsehsing	115.0	55.0
Peip'io	92.0	56.2	Nant'ung	101.1	69.5
Tunghua	97.1	44.4	T'ienfu	103.6	33.9

Utilizing the Capacity of Mines and Quarries

The existing notion that in China the fundamental output of coal derives from small mines does not correspond to reality. Thus, for instance, in 1957 68 percent of the output of the Ministry of Coal Industry was obtained from mines with an annual productivity of over 300,000 tons.

The capacity of the active Haichou and Western Pushun coal quarries is more than five million tons a year each. The large and medium mines and coal quarries operated by the Ministry, well equipped and with long years of service, with an annual capacity of more than 300,000 tons make up as to quantity more than 40 percent of the total mining resources.

It is natural that in the large and medium mines and quarries the question of national organization of production assumes greater significance than in the smaller ones.

Owing to a high technical equipment and a higher level of organization of production, the large mines have a series of economic advantages in comparison with medium and small mines, that can be seen from an analysis of production costs of coal in the regions of the CPR. In Table 153 are given the actual production costs (in yuans) of one ton of coal depending on the size of the mines.

Table 153

Medium costs in yuans of 1 ton of coal in groups of mines	Large (in 28 mines)	Medium (in 45 mines)	Small (in (48 mines)
In 121 mines:	10.62	11.22	14.20
among them:			
in the Northern region	9.05	9.75	11.6
in the North Eastern region	11.80	12.65	16.25
in the Eastern region	8.77	11.1	17.25
in the Central-South- ern region	7.10	9.65	11.60

The production costs of coal are on an average in China as a whole and in every economic region separately in the larger mines lower than in the smaller and medium mines (an exception are the very small mines of the people's communes and of local industries, established at the outcrops of seams).

If we assume the production costs of coal in the larger mines to be 100 percent, then they amount in the medium mines to 105.6 percent and in the small ones to 133.5 percent.

Approximately the same situation is observed in relation to labor productivity which in the large mines is substantially higher than in the medium and small mines. Thus, the productivity of an employee (in output) in the large mines amounts to 0.939 tons (100 percent), in the medium to 0.841 tons (89.6 percent), and in the small mines to 0.563 tons (60 percent).

Consequently, the economic efficiency of big mines is beyond doubt. This indicator is, however, not exhaustive. One may not always confine oneself to considerations of economic efficiency only. The necessity of the most rapid development of the coal output, the early putting into operation of new mines, the limitation on material resources, the necessity for fastest return of investments, etc. compel to consider the actual need and inevitability of constructing smaller and medium enterprises. And in the concrete situation, from the viewpoint of the national economy, this is expedient. This was true during certain years in our Soviet practice, and such is the case now in the CPR. That is why at present in the CPR the policy of simultaneous construction of large, medium and small mines, of developing the coal industry centrally and locally at the same time, has been adopted.

The acute necessity of further increasing coal production caused the need for a rapid assimilation of the capacity of new mines. At present a great deal of

experience in the organization of speedy assimilation of planned capacities of large and medium mines has been accumulated. Thus, the "Hsiehchiachi" mines No. 2 and No. 3, with a capacity of 900 tons a year, constructed during the First Five-Year-Plan with accelerated methods (the first in 27.5, the other in 24 months), reached a daily planned capacity of 3000 tons in 20 months instead of a year. The large "P'inan" mine No. 5 reached its planned capacity of 5,000 tons a day in 15 months from the day it was put into operation, in which 75 percent of the coal was mined with the application of hydraulic shoring. The "T'ananshan" mine, with a planned capacity of 2,000 tons a day, was put into operation in the middle of July 1958; and a month later it reached already its planned capacity. Three months later the mine started to yield 2,460 tons of coal a day. By way of an example deserving attention one may mention the "T'ah-uanshan" mine with a capacity of 1,000 tons a day, which five days after having been put into operation exceeded its planned capacity and reached a daily output of 1,090 tons. The constructors of this mine, while breaking with old traditions, simultaneously conducted construction work and worked toward extracting the planned capacity of the mine in form of output. The employees of the majority of new mines, after reaching the planned capacity, make all efforts to double the capacity in a short time.

Among the measures securing in the coal industry of the CPR such a rapid assimilation of the capacities one must list:

- putting into operation mines with a readiness up to 95 percent of estimated value;
- preparation of a sufficient front of workable stopes by the time the mine is put into operation;
- timely training of personnel for new mines at the expense of the basic estimate of construction (for instance, the machinist of hoisting machines begin to undergo instruction two years before the mine is put into operation, while the working crews prepare all adjacent mines, etc.);
- furnishing the new mine with workers in a greater quantity than is needed for the fulfillment of the plan of output;

- a well conceived scheme for opening up and preparing that would guarantee a concentrated work from the boundaries of the mine area through drifts;

- accomplishment of a great volume of preliminary work which ensures a rapid development of the mineable stopes where the coal is extracted after the mine is put into operation; thereby high rates in the execution of preparatory

work in coal in the range of 250 meters a month are achieved;

All these measures contribute to an accelerated assimilation of the planned capacity of the mines, and furthermore to its significant overfulfillment. The rapid assimilation and the subsequent doubling of the planned capacity is achieved not only in the mines, where powerful seams are exploited, but also in mines with thin and medium seams.

The accelerated methods found also wide application in the construction of mines and coal quarries.

Organization of Labor and Technical Fixing of Output Quotas

The basis of organization of labor in the mines and primarily in the mining and preparatory operations is the production brigade. The numerical composition of a brigade in the mines of the CPR depends on the volume and nature of work. The brigade is headed by a brigade supervisor. For directing the brigade, he is paid a bonus from five to seven percent of his wages according to pay scale.

In working with mining machines and combines, the labor of the workers has been until recently preferably differentiated. In the gallery there worked the machinists of the undercutting machines, of combines, drillers, blasters, loaders, timberers, timber haulers, conveyor movers, installers, quarry stone gatherers, shore-up men, mechanics, prop-removal workers, repairmen of mechanisms, and others. But lately the predominant form of work turned to complex brigades in which every worker does any kind of work (except work requiring a high qualification and special training: operation of a machine, blasting).

For the accomplished work volume the brigade is paid by piecework. The earned amount is divided among the members of the brigade in accordance with the categories of the wage scale.

The brigade participates actively in the deliberations on the plan concerning the production assignment, the production costs and other indicators, they search for reserves and present the plan of the brigade in its final form to the director of the mine for approval. The brigade appoints its representatives for lending assistance in managing production.

The managers of production sections and the mine are working a certain number of days manually in the mine together with the workers, they explain on the spot particular questions which must be solved, and eliminate in joint efforts turned-up shortcomings.

There are work quotas in the mines and quarries for

workers of a rather considerable number of occupations. These quotas are worked out and set up by the mine and the trust. But the right of final approval belongs to the combines. The work quotas are usually set up for one year, at the end of which they are revised. Each trust works out its own quota system. In particular sites there are common quota systems in use. A single quota system for the coal industry exists only in the sphere of construction and performance of geological work.

The work quotas are set up on the basis of chronometric observations, statistic data and other materials with a massive and active participation by workers.

As an example the work quotas in relation to fundamental factors are given below. These quotas are taken from the "Quota System of Mining and Preparatory Operations" that are in force in the "Lingsi" mine. The data given in Table 154 give an idea of the level of work quotas of the combines (in cubic meters per shift) in the mineable stopes.

Table 154

Thickness of Seam in Meters	Solidity of Coal	Length of Gallery			
		up to 80 Meters		over 80 Meters	
		Angle of Slope			
		up to 25°	over 25°	up to 25°	over 25°
Up to 1.0 Meter	Hard	91	84	109	99
	Medium	101	91	121	109
	Soft	111	100	133	120
1.01—1.5	Hard	135	121	161	145
	Medium	150	135	179	161
	Soft	164	147	197	177
1.51—2.0	Hard	174	157	209	188
	Medium	193	174	232	209
	Soft	213	191	255	230
2.1 and more	Hard	157	141	188	169
	Medium	174	157	209	188
	Soft	191	172	230	207

As may be seen from the cited data, in preparing the work quotas of the combine, the affect of the four fundamental factors were taken into account: the thickness of the seam, the solidity of the coal and the length of the

gallery. Approximately in the same way quotas for opening up a seam and lowering of mining machines are set up.

The extraction of coal by means of explosives found an extremely wide application in the CPR in mining operations.

In Table 155 are given the work quotas (in tons per shift) for undercutting, timbering and loading of coal on the conveyor in the stopes in seams with solid coal using explosives, but without mining machines and miner's picks.

Table 155

Angle of Slope, in degrees	Work Quotas, in tons per shift							
	Thickness of Seam, in meters							
	0.8-1.0	1.01-1.2	1.21-1.5	1.51-1.8	1.81-2.1	2.11-2.4	2.41-2.8	Over 2.8
0-15	6.1	8.5	10.4	11.8	13.0	13.7	14.6	14.7
16-25	6.9	9.1	10.8	13.3	13.8	14.3	15.2	14.8
26-35	6.6	8.7	10.3	11.7	12.5	13.8	14.3	13.8

Similar tables are set up separately for medium solidity and for soft coal. It is natural that the work quotas of the worker of medium and soft coal is higher. Thus, for instance, with a slope of the seam of 0 to 15 degrees for coal of medium solidity with the same gradation of thickness of the seam constitute proportionately: 7.9; 10.9; 13.1; 15.1; 16.8; 18.5 tons (in output), for soft coal - 8.4; 11.7; 13.9; 16.1; 17.5; 18.4; 19.4; 19.5 tons (in output).

In the "Jinghsi" mine similar quotas have been worked out for 36 types of work.

Training of Workers

All new-comers to the mine undergo a seven to ten day training, during which they acquire elementary information on mining and study the necessary minimum of rules of safety engineering. More complicated skills, as for instance the skill of a mechanic, the workers acquire after undergoing an instruction in specialized courses, detached from production. The instruction lasts from 1.5 to 2 years. As a rule, new workers are trained and gain experience on the job. Usually a newcomer to the mine finds for himself a teacher, an experienced worker, and concludes an agreement with him on undergoing training in the selected occupation without any pay for this training. If the

training gave positive results and the worker acquired well his skill, then the worker who acted as teacher is awarded a diploma or is paid a premium in money.

In the near future an intensification of the work on the organization of labor is contemplated. The organization of complex brigades must find wide application. The work quotas must be revised and approved every year anew and constitute a progressive factor that would uninterruptedly contribute to a rise in labor productivity. Special attention is directed toward furnishing new enterprises with a work force for which purpose plans for the training of skilled workers must be worked out that would envisage the direct participation of these new workers in production work. This means a considerable reduction in outlays for training of personnel.

All mines have connections with the people's communes and, on the basis of a contract with them, they attract peasants as temporary workers. In three to four years the number of temporary workers in active enterprises must reach 30 to 50 percent of the entire personnel, and in construction 70 percent.

Labor Productivity

Not so long ago the basic problem in the CPR was the problem of employment for the population. The practically unlimited resources of labor and the acute necessity of placement led to the situation in which not seldom on working places in production workers were retained, especially assisting workers whose presence was not dictated by production requirements.

The release of such workers as a result of continuous improvement and expansion of mechanization of production processes led to a question of their placement the solution of which was difficult. Under these conditions the problem of raising labor productivity assumed a somewhat different, specific significance. The release of employed people was not the most important task of production and the indicator of the level of labor productivity did not characterize the actually necessary production outlays of labor. This question assumes at present an entirely different qualitative significance. Now, in the period of the giant leap forward in the development of industry and of the entire national economy, despite the presence of over 650 million people, such enormous masses of population take part in the economic rise of the country that in individual regions even a shortage of working hands begins to make itself felt. The rise in

labor productivity has become one of the most important tasks of the national economy of the country and one of the indicators for the economic competition with the capitalist countries.

In the coal industry the labor productivity rose during the last year in extremely high dimensions which may be seen from the data given in Table 156.

Table 156

Category of Workers	Labor productivity in Tons per Shift		
	1957	1958	1958 in per- centages over 1957
Workers engaged in exploitation	0,978	1,305	33.0
Workers engaged in output	1,155	1,449	26.0
Underground Workers	1,542	1,834	19.0
Workers at the Face in the stopes	3,544	4,165	17.0

The average monthly labor productivity of a worker engaged in exploitation in 1958 amounted to 34.2 tons as against 26.5 in 1957, i. e. it rose 29.3 percent.

The compound data in the Ministry of Coal Industry attest to the great success of the Chinese miners as a result of which the number of employees engaged in the output of one ton of coal decreased by one third in one year.

Particular reference must be made to the expediency of using such a generalizing indicator as the labor productivity of the employee engaged in exploitation. This indicator embraces all employees connected with direct extraction of coal and thus removes the question what occupations of production workers and white-collar workers to include in the calculation of labor productivity. The use of such an indicator practically excludes overestimating labor productivity and by the same token it achieves an identity of calculation and the possibility of collation when comparing the results of work of enterprises.

In 1958, from month to month, all indicators of the work in the coal industry improved, among them also labor productivity.

The unprecedented labor boom, the high degree of conscientiousness and organizational ability of the Chinese people led to the situation in which there is not a single enterprise, mine administration, or trust where there is not a considerable increase in labor productivity.

In Table 157 are given the figures for February and October 1957, characteristic of the giant leap forward in

the rise in labor productivity in certain trusts and mine administrations.

Table 157

Trust, Mine Admini- stration	Product- ivity per Cubic Me- ter of Seam in Kilogr- ams	Productivity of Workers in Tons per Shift		Trust, Mine Admini- stration	Product- ivity per Cubic Me- ter of Seam in Kilogr- ams	Productivity of Workers in Tons per Shift	
		Feb. 1958	Oct. 1958			Feb. 1958	Oct. 1958
Fushun	2,899	1,366	2,271	Hsinwen	2,462	0,916	1,505
Chiatso	3,692	1,666	2,264	Chai-ko-en	3,087	1,204	1,500
Huainan	2,581	1,262	2,115	Tsepo	1,344	0,823	1,416
Fengfeng	2,258	1,139	2,045	Liaoyuan	2,855	0,888	1,436
Fuhsin	2,493	1,244	1,992	Hsienkang	2,640	0,963	1,381
Hekang	3,106	0,910	1,923	Hepi	3,300	0,990	1,373
Hsishan	3,430	1,123	1,861	Shangshang	1,563	0,874	1,371
K'aiilang	2,728	1,079	1,847	Tiaohé	1,795	0,908	1,348
Yangch'uan	2,269	1,195	1,840	Nant'ung	2,416	0,752	1,304
Tat'ung	2,442	—	1,797	Peip'iao	2,217	0,923	1,272
Chi-hsi	1,652	1,012	1,729	Tsehsing	1,580	0,654	1,218
Luang	2,918	1,339	1,702	Tsaochuan	2,115	0,892	1,213
Ilo	3,558	0,792	1,612	Fangtse	2,461	0,547	1,003
Penchi	2,307	0,760	1,581	Pingting-shan	2,050	—	0,833
Tingting	2,131	0,885	1,567	T'unghua	2,658	0,699	0,751
P'ingsiang	2,795	0,868	1,548	Tayang	0,931	0,659	0,684
Chinghsi	3,688	0,865	1,520				

A very great significance is attributed in the coal industry of the CPR to the indicator of the turnout for work of able-bodied workers. This indicator reflects indirectly the level of ideological and political as well as prophylactic and sanitary activity in the enterprises.

An opinion of the turnout for work of able-bodied workers may be formed on the basis of the data given in Table 158 in trusts and mine administrations for February 1958.

Table 158

Trusts, Mine Administrations	Turnout for Work of Able-bodied Workers Based on Registration in Percentage	Trusts, Mine Administrations	Turnout for Work of Able-bodied Workers Based on Registration in Percentage
Chinghai	89.99	Taepo	90.31
K'ailiang	92.89	Fangtse	93.82
Fengfeng	89.03	Hainwan	93.55
Lingting	89.90	Tamochuan	92.78
Tangch'uang	84.66	Tiwang	92.53
Haishan	89.10	Huainan	91.63
Waiyungang	87.49	Chiaotso	91.65
Pao'ou	86.46	Lic	93.57
Pohsin	92.01	Tsehsing	91.84
Panchi	91.39	P'inghsiang	95.53
Maoyuan	89.74	Hepi	91.62
P'unghua	90.60	Nant'ung	93.57
Chiaphe	91.25	Tungch'uan	93.02
Wushai	90.62	T'ienfu	92.77
Hakang	91.46	Tayang	91.97
Shuangshan	91.37	Huan	94.31
T'ungch'ian	89.62	Janch'an	96.15

The fluctuations in the percentage of the turnout for work can be explained by differing working conditions, the degree of assimilation of the region as well as by a series of other causes, including climatic causes.

In 1957, the turnout for work of able-bodied workers in the coal industry of the CPR amounted to 89 percent. Now the task is posed to raise the turnout for work of the able-bodied workers in active mines and quarries and in construction to 90 percent or more. The main ways to achieve this are:

intensification of ideological and political activity among workers;

unrelenting adherence to the "mode of work" and to the "mode of wages";

enlarging and improving to a large extent of the sanitary and prophylactic activity;

strict adherence to the "course in safety on the job."

Structure of the Labor Force

The number of workers in the system of the Ministry of Coal Industry in 1958 rose, compared to the preceding year, 24 percent, whereas the coal output increased 66 percent. Such a rise in coal output was achieved primarily at the expense of an increase in labor productivity.

In a short period of time, in the course of one year, there occurred essential changes in the structure of the labor force that were conducive to a rise in labor productivity. The qualitative changes in the structure of the labor force (in percent) may be seen from the data of the circular graph shown in illustration 238.

The implementation of the "great leap forward" called for a need of revising the structure of the labor force in the direction of strengthening the productive category of "workers engaged in coal output" at the expense of preferential reduction of the younger auxiliary personnel.

The drop of the share of the engineering and technical workers and of mine supervisors occurred because of a change in calculation and a transfer of a part of them to clerical workers, since they had no direct relation to the engineering and technical workers and to the mine supervisors. Therefore, this group of clerical workers increased slightly.

There also occurred substantial positive changes in the category of "workers engaged in the extraction of coal underground," which can be seen from Fig. 239.

In connection with the great rise in coal production and the preparation for a new jump during the changeover to more progressive systems of exploitation, the volume of preparatory operations increased which led to a rise in the number of workers engaged in these operations.

In the Five-Year-Plan a further improvement in the productive structure of enterprises, an improvement in the relations between the separate groups of production workers and clerical workers is contemplated in order to raise in the years to come the share of production workers to 80 percent instead of 70 percent in 1957.

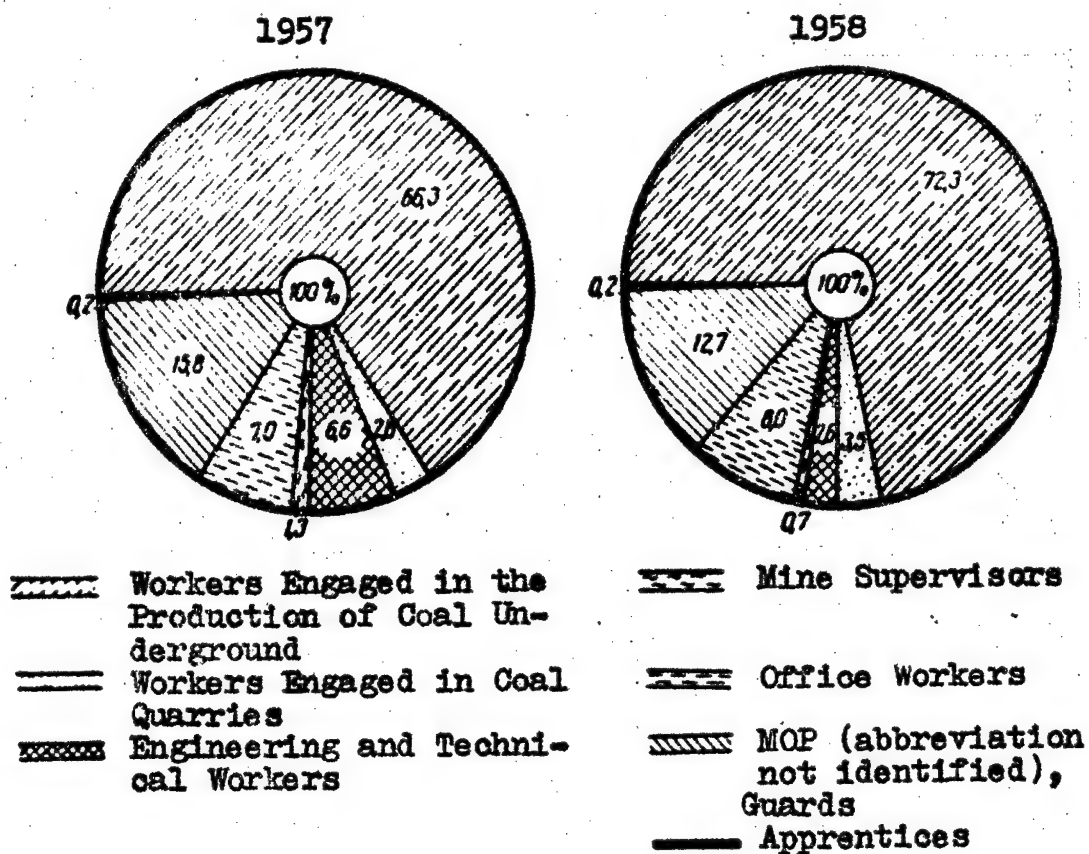


Fig. 238. Diagram of Qualitative Changes in the Structure of the Labor Force in the Coal Industry of the CPR (in percentages)

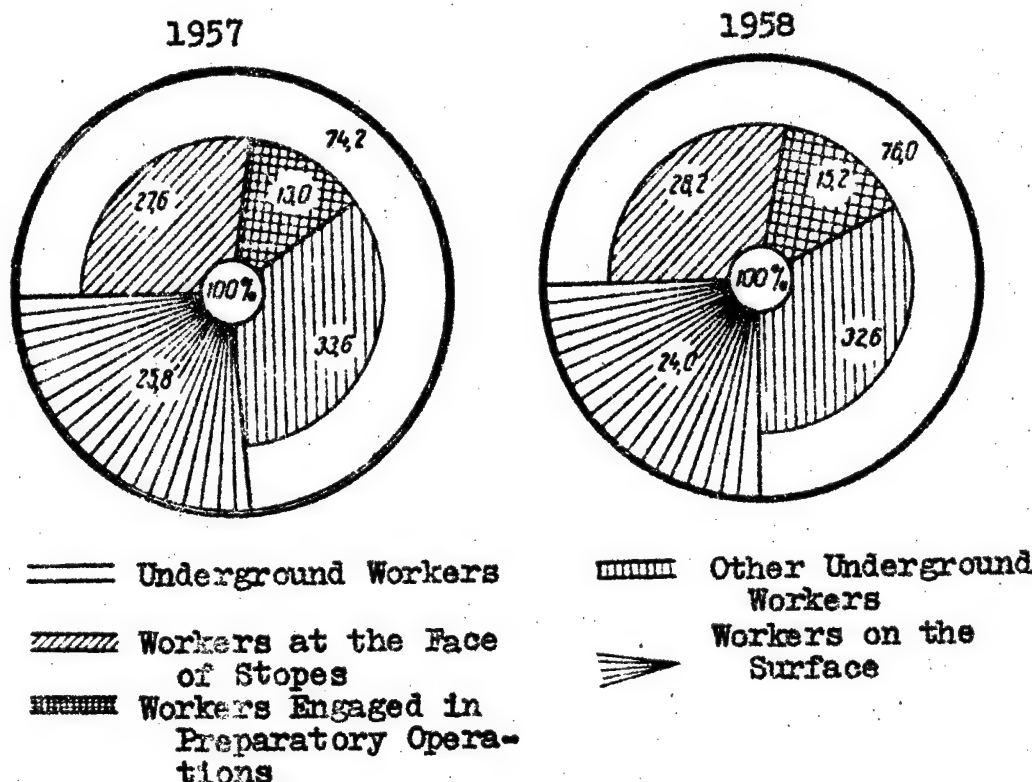


Fig. 239. Diagram of Structural Changes in the Category of "Workers Engaged in the Production of Coal Underground (in Percentages)

Wages

A rationally devised wage system must correspond to those basic tasks that have been put forward before the industry and the national economy. Such a task at the given stage of development of the coal industry of the CPR is the all-out increase in the coal production, accompanied by a struggle for a reduction of the withheld operation costs, by a fuller utilization of the applied technology and an improvement of the qualitative indicators of the operations in the coal industry.

If previously in coal mines and quarries the work was paid by the time, so during recent years direct payment by piecework found wide application without any sort of limitation (ceiling). In contradistinction to payment by the time, payment by piecework absolutely stimulates more the rise in labor productivity and also increases the personal interest of the workers. At the present time, 50 percent of all workers are covered by payment by piecework.

Only those workers continue to be paid by the time whose work is basically connected with running machines and mechanisms and whose work volume it is difficult to assess (workers of ventilation, on the surface of mines, of concentration, electromechanical service, and others). In this respect there is a great similarity with the system of payment for work in the coal industry of the USSR.

Side by side with payment by piecework there exist incentives in form of bonuses for overfulfilling the plan of coal output, for accident-free operation of mechanisms, for fulfilling the quotas of cyclic procedures. Currently, a new basis for awarding bonuses is being worked out and it is contemplated to introduce a uniform "leap" bonus for workers. The engineering and technical workers are also receiving bonuses, but once in three months, six months, or 12 months. In every province these questions are solved on the basis of the peculiarities of work in the given region.

In the coal industry of the CPR, as in the USSR, there exist wage scales and wage rates. The wage scale differentiates the remuneration for work according to the complexity and difficulty of the work and the qualification of the worker. The wage scale for workers engaged in underground operations and on the surface of the mine is arranged in eight categories, and for construction workers (working on the surface) in seven categories. A definite wage rate corresponds to each category.

The range of the wage scale, i. e. the correlation of the coefficients of the extreme categories, is established for underground workers in a proportion of 1 : 3.2. Each category is 18 percent greater than its predecessor.

For workers, employed on the surface of the mines, the range of the wage scale is 1 : 3. The coefficient of each category, beginning with the second one, rises by 17 percent. Approximately the same wage scale is in force in the quarries and in the construction of coal enterprises. For workers engaged in the output of coal and in the removal of shale, in coal and schist quarries, the range of the wage scale is set up in a proportion of 1 : 3.5 and the correlation between the categories is 17.8 percent.

In construction work, the correlation of the coefficients of the extreme categories is 1 : 2.8 and the correlation between the categories is 18.7 percent. For the remaining operations and workers of various occupations (drivers, cooks, and others) each province and autonomous region has its own wage scale.

In the Chinese People's Republic the payment of labor is very differentiated. Due to this the quoted wage scales

are subdivided into ten classes, i. e. each category has yet 10 wage rates. This is necessitated by the essential difference of living standards in the individual regions (agricultural provinces, newly assimilated areas, enterprises in mountaneous localities, and others), by working conditions, by the importance of the enterprises.

The correlation in the remuneration for work between the minimal and maximal classes in one and the same category fluctuate in the range of 40.2 percent. Thus, for instance, in the first category the monthly wage rate for the minimal class amounts to 28.5 yuans, and for the maximum class in the same category the monthly wage rate amounts to 40 yuans.

The same range (equal to 40.2 percent) in the remuneration of work between minimal and maximal classes applies to other categories as well. Thus, for instance, in the eighth category the monthly wage rate for the minimal class amounts to 91.2 yuans, and for the maximal class to 128 yuans.

In small mines of the local industry the wages, as in the USSR, are somewhat lower than in the basic mines subordinated to the Ministry of Coal Industry.

The rise in the technical equipment in the mines and quarries, the improvement in the organization of production and labor led to an increase in labor productivity which in turn made possible the rise in wages of workers.

In 1958, average monthly wages of production workers and engineering and technical workers rose over 1957 and amounted in yuans to:

Mine Workers Engaged in Coal Production	76.14
Among them:	
conveyer loaders	88.46
Drifters	86.52
Quarry Workers	76.14
Engineering and Technical Workers in Mines.	92.56*
Salaried Employees	69.44*
Junior Service Personnel.	50.33*

* Data for 1957

In the second Five-Year-Plan there is contemplated an improvement of the wage system in proportion to the development of the forces of society and on the basis of the socialist principle: "Everybody according to his ability, to

everybody according to his work." The level of wages for production workers and office workers must gradually rise on the basis of the development of production and the socialist accumulation of means. Rational wage scales must be worked out and the system of payment by piecework must be perfected.

Production Costs

The most important total indicator and the result of all productive and economic activity of the enterprise and the branch as a whole are the costs of production. The production costs provide a synthetic indicator in which are reflected the technical, organizational, economic, social and other accomplishments that determine in the last analysis the level of costs.

The efforts of the Chinese people in the course of recent years favorably affected the costs of extracted coal. The costs of coal in 1958 in comparison with 1957 dropped 16 percent. Such an enormous reduction was achieved as a result of daily implementation of the Party's general line: "Intensify all efforts, press forward, build socialism according to our principle more rapidly, better, and more economically."

The reduction of costs was achieved both in the coal mines and in the quarries. An opinion of the dimensions of the reduction of costs for 1958 in relation to the preceding year (in percent) may be formed on the basis of the following figures:

	1957	1958
Coal Industry (Ministry of C. I.)	100.0	84.0
of which:		
in Mines	100.0	85.0
in Quarries	100.0	76.5

In recent years in the CPR an ever greater development of the coal output by the strip method is noted. As is known, this method is more efficient, if compared with the underground method, and yields a cheaper production.

The reduction of costs with the strip method is greater than with the underground method. If in 1957 the costs of coal output by the strip method constituted 70 percent of the costs of output with the underground method, then in 1958 it was less than 63 percent.

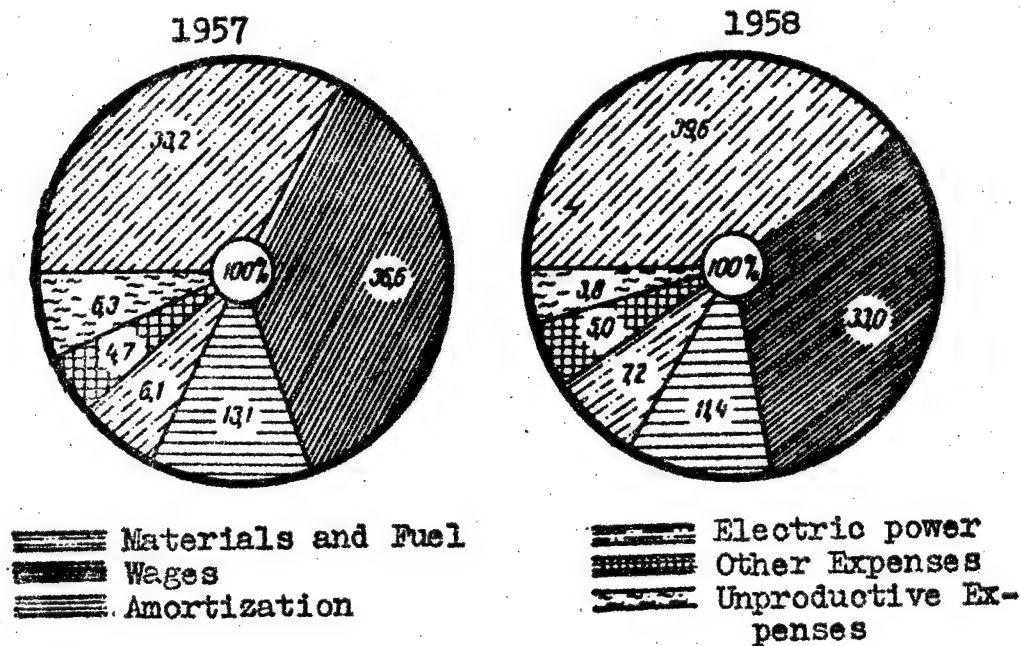


Fig. 240. Structure of the Commercial Costs of Coal
(in Percentages)

The structure of the costs of coal is of great interest. It is entirely dissimilar to the structure of costs of coal output in the Soviet Union and this natural, since the specific conditions of the CPR make themselves felt also in this question. The high price of materials, particularly of timber, of electric power, the great share of amortization with a relatively small share of wages are the distinctive features of the structure of costs of coal which is clearly seen from the data of the circular graph shown in drawing 240.

The structural changes of costs in 1958, during the period of the "great leap forward," were caused by the rise in power facilities and mechanization of the production processes which led to an increase in the consumption of electric power, and consequently, to a rise of this element of costs. A considerable rise in labor productivity affected a decrease in outlays for the item "wages." The reduction of administrative expenses led a decrease in the share of the so-called non-productive expenses.

If one turns to the dynamics of the structure of costs and compares them with 1952, one may see that the share of wages at that time constituted 25.74 percent, whereas in 1958 it constituted 33 percent. This points to the great changes in the growth of wages during the First

Five-Year-Plan and to the improvement of the living conditions of workers. The expenses for management of the enterprises dropped quite considerably (in 1952 these expenses constituted 19.7 percent, and in 1958 all "other expenses" constituted less than nine percent), which attests to the great work accomplished in the improvement of the structure of management in the industry.

Not less interesting is the structure of costs of coal in 1958 according to the methods of extraction of the mines - whether according to underground mining or the strip methods which may be seen from the figures (in percentages) given in Table 159.

Table 159

Elements of Costs	1957		1958	
	Mines	Quarries	Mines	Quarries
Materials	32.79	26.19	39.03	34.62
Fuel (for Own Use)	0.63	0.90	0.74	1.68
Wages	36.84	31.32	32.91	29.92
Amortization	6.11	23.49	11.18	17.98
Electric Power	12.58	5.26	7.28	6.39
Other Expenses	11.05	12.84	8.86	9.41
Total	100.0	100.0	100.0	100.0

The decrease in the share of amortization deductions in coal quarries is caused by the rise in coal output by the strip method (in one year it was more than 2.3 times) high, of course, in such a short time could be achieved only to a considerable extent at the expense of putting into operation small quarries not requiring new powerful facilities. It was this item that led to a decrease in amortization deductions.

The substantial rise in the expenses for item "materials" was basically brought about by a rise in prices for materials, particularly for timber.

Worth our notice is the circumstance that the costs of coal in the mines of the local industry is somewhat lower than the costs of coal produced in the mines and quarries under the control of the Ministry of Coal Industry. This is explained by the construction and exploitation by the coal industry of small mines, located at the outcrops of coal seams, not deep, not requiring drainage, ventilation, in many cases not even timbering of the locale where the

coal is extracted. Such mines, as a rule, are not long-lasting. Their existence is possible thanks to favorable natural conditions and the outcrops of coal seams near the surface of the earth which is the preconditions for small operation costs of the output of coal.

In the drive for a reduction of costs a great role is played by the workers' brigade and by the representatives appointed by them. The brigades discuss the plan of costs, preliminarily worked for the sections and brigades, and if they find reserves toward reduction they make proposals for lowering costs.

The representatives of the workers are elected to deal with "timber affairs," "wages" and other items of expenses. They requisition timber within the limits of the quota, watch its consumption, take into account the use of timber and consider measures on how to save timber materials. The chosen workers on wages assist the brigade-supervisor to correctly distribute the wage fund among the members of the brigade.

Consumption of Materials

As was pointed out before, the most important item of expenses in the coal production is the consumption of materials. In the costs of coal the consumption of materials constitutes more than one third of all outlays. The biggest outlays are set aside for the purchase of timber and explosives the share of which constitutes approximately three fourths of the total value of the consumed materials of which the value of timber exceeds 50 percent of the total value.

An opinion of the share of the expenses for timber, explosives and electric power in the coal industry of the PR may be formed on the basis of the figures given in Table 160.

Table 160

Types of Expenses	Years								
	1949	1950	1951	1952	1953	1954	1955	1956	1957
Timber per 1,000 Tons of output in Cubic Meters	28.27	28.33	27.25	24.41	25.12	25.57	25.18	25.92	24.81
Explosives per 1,000 Tons of Output in Kilograms	91.6	96.5	135.4	133.3	146.4	180.28	180.88	202.26	214.69
Electric Power per Ton of Output in Kilowatt per Hour	16.81	15.45	15.37	12.36	14.44	15.54	15.29	16.33	14.32

Present measures on increasing the repeated utilization of timber in the stopes are being intensified. The laying of the timber roofing in the stopes is almost completely mechanized. There are more than 800 winches with a capacity of 20 horsepower, many small winches and mechanized prop removers in operation. The repeated utilization of timber constitutes about 60 percent, i. e., on an average almost each timber prop is utilized twice, and in some individual mines eight to nine times.

An ever wider use is made of props made of stone or reinforced concrete in the preparatory operations, in rooms and in pit vicinity yard areas. Other substitutes of timber find acceptance. This affected substantially the decrease in the consumption of supporting materials in 1958 and 1959.

The ever growing share of the entire coal output by the strip method and also the putting into operation of small mines where the extraction of coal in many cases is still effected by traditional methods, led to a rise in the share of the consumption of explosives.

Since there are in the underground and strip method of coal production essential differences in the consumption of timber and explosives, the consumption of electric power (Table 161) being approximately identical, the data for four years on the consumption of these materials depending on the methods of exploitation are given.

Table 161

Types of Expenses	Method of Mining	Years			
		1954	1955	1956	1957
Timber per 1,000 Tons of Output in Cubic Meters	Underground	28.32	27.81	27.82	26.38
	At the Face of Stopes	20.06	19.30	19.74	18.70
	Preparatory Stopes	36.66	40.80	44.49	44.82
	Open Strip Method	0.95	1.87	1.47	1.12
Explosives per 1,000 Tons of Output in Kilograms	Underground	169.20	161.93	173.83	183.10
	At the Face of Stopes	102.56	100.06	113.96	124.37
	Preparatory Stopes	480.31	469.96	509.08	534.95
	Open Strip Method	267.16	329.21	494.43	647.92
Electric Power in Kilowatt-Hours per Ton of Output	Underground	14.12	13.91	13.59	14.32
	Open Strip Method	14.81	18.59	17.76	15.84

In the prespective plans particular attention is being given to savings in timber, since timber will remain also in the future the most deficient material in the country. For the purpose of saving timber materials, broad use is contemplated of reinforced concrete, metal, and anchor supports, metallic frames, "verkhnyaki" [?], reinforced concrete crossties, etc. A drop in the consumption of reinforcing timber per 1,000 tons of coal output from 26.38 cubic meters in 1957 to 16 cubic meters by the end of the Second-Five-Year-Plan is anticipated.

The workers of the technical supply service are charged with the task of supplying in time the production departments with qualitative materials and equipment, with rational consumption, saving and reliable haulage of materials and equipment.

For this purpose there is contemplated the establishment of a liason between the production enterprises and the producers, the conclusion of longterm agreements on the technical supply, the improvement of the work of warehouses and the release of materials according to strictly worked out quotas, the provision for a composite delivery of equipment, the selection of personnel skilled in technical supply work who are well acquainted with production and unswervingly wage a struggle against wastefulness in the utilization of materials.

END

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